

stone is equally contradictory in its results; it is at all times a very great absorbent; and when exposed to heavy rains and vapours, in a moist climate like this, is the subject of rapid decay. Such will be the fate of the beautiful architectural monument of the Houses of Lords and Commons, unless averted by saturating the whole with a composition that shall destroy its absorbent powers.

Again, the nature of earth forming the chief ingredient of the rock, and the power or force of resistance possessed by the enveloping fluid, very often determine the durability of stone; the presence of lime, in any form or combination, is always inimical; it is not only a powerful absorbent, but is always greedily attacked by the oxygen of the atmosphere, and of the waters received into its pores; thus it is, the closest, the most ponderous marble, cannot contend long against out-door exposure in this country, although in hot dry countries it may endure for many ages, as is testified by the magnificent remains of ancient Greece and Rome. Even granite desquamates rapidly in an exposed situation, and rapidly so when its crystalline particles are ill assorted to each other, or are but slightly connected together.

The most durable rock, but unfortunately the most expensive, as the most difficult to sculpture, is the silico-carbonaceous. The carboniferous limestones, containing an excess of carbon and iron, are far from being abundant in this country, as applicable to building purposes, for they generally run too much into the stratified form to be quarried in huge masses; but as the argillaceous earth replaces the lime, so we find in the siderous rocks porphyry, trap, basalt, jasper, and all the hardest concrete and crystalline masses in nature, bodies whose absorbing powers are exceedingly trifling, and whose powers of resistance enable them to brave every exposure under every climate.

It is well known that of all cements made by the art of man, those which contain carbonaceous matter are by far the most durable; and in hot climates experience proves that they sometimes attain a hardness beyond that of the hardest granite, and which, like porphyry, will resist and turn the sharpest and strongest iron implement. The natives of the East Indies have a number of receipts for making their cement, using for all better works out of door the finest shell lime, which is mixed with sugared water,—2 lbs. of sugar to every gallon of water; they afterwards add ghee (melted butter) or cocoa-nut oil; and if for plastering the interior, they also add the whites of eggs, &c.; so that the cement shall obtain by degrees a marble hardness, previous to which it may be burnished, so as to acquire an exceeding high polish. The Persians also have a method of making black marble by triturating very highly fine shell lime, drawn from their quarries, with the black naphtha common to the country. We also read that bitumen or pitch was generally used in olden times as a cement.

I mention these things to shew that art has here followed in the step of nature; that carbon, when it gives character to rock, and as it almost invariably is accompanied with iron, is productive of that hardness which it acquires; and that, whenever it unites with lime or magnesia in the form of rock, this stone is much more valuable for all the purposes of building than any other; and though Time is very often known to bleach this stone by abstracting its carbon, yet so long as it remains, it is a sure protection against the corroding influence of the atmosphere.

The stone changes its condition after being quarried from the bed; becoming specifically lighter and more porous; it follows, that great care should be taken in all experiments made, that the material acted upon should be in its pristine state; for if exposed in the first instance to a high temperature, in order to abstract its moisture, or to ascertain its conducting powers of heat, its organical disposition must of necessity be more or less changed, and consequently the experimental results will be fluctuating, and constantly contradicting each other.

(To be continued.)

TRINITY COLLEGE, PERTSHIRE.—The building is now in full operation at Cairnies, the property of George Patton, Esq. The foundation stone was laid last Monday week.

THE NATURE OF DESIGN.

A Paper read at the meetings of the Decorative Art Society, March 13th and 25th.

BY MR. CRABE, F.R.S. MEMBER OF THE INSTITUTE OF FINE ARTS.

(Continued from p. 424.)

In France, there are about eighty recognized Schools of Design. They are varied and adapted to the nature of the productions and requirements of the districts where they may be situated.

The French Schools are all open, public, and free; they are formed upon the conviction that the application of the principles of fine art and science to manufactures is the best means of improvement among the people, and a succession of legislative measures, some general, others local, have adapted these schools to the requirements of peculiar branches of industry. As an example, I will take the school of Lyons, which originated in a decree of Napoleon, dated from Warsaw. Its special object is improvement in the silk manufacture; and having gradually extended its usefulness, is divided at present into six principal departments,—painting, architecture, sculpture, engraving, botany, ornament, and *mise-en-carte*, which is the art of transferring to a fabric in manufacture any model or drawing upon paper. These departments are again subdivided into classes for particular instruction. A botanical garden is attached to the institution, and the drawings are almost invariably made from living plants and flowers. A large library of engravings is attached; a cabinet of natural history, and a very large museum. A gallery also contains all the works for which prizes have been given in the institution. Careful instruction is given on the theory and combination of colours, and their usefulness in dyeing, printing, and application to manufactures. Attached to the school are consulting chemists, whose researches are invaluable for the invention and production of durable and fine colours. We here discover the secret which produces the extraordinary superiority and brilliancy of French colouring. The influence of this school has been incalculable, having elevated alike the character of the people and of the silk manufacture; its effects are perceived in the adaptation of classical and general embellishment upon the dwellings and familiar objects of life.

One of the most remarkable circumstances in connection with the subject is the jacquard loom, whose beautiful and simple machinery produces the most intricate and delicate patterns by the common shuttle. There are particular trades that for successful design positively require the designer to be quite familiar with the manufacture, and also to be *drays upon the spot*. Weaving is one of these; and in the Lyons school, designers intended for the silk manufacture are carefully instructed in the transmission of patterns. A manufacturer of any eminence will employ, or rather have identified with his business, three or four artists. In England, very frequently, one ill-paid and often inefficient designer serves half-a-dozen manufacturers; but at all events they are without system.

The design having been made on paper, is then extended on another paper ruled of a larger size, which shows the pattern as magnified; each square representing a thread, perhaps twenty to an inch; this is called by the French *mise-en-carte*, i.e. *putting on ruled paper*. The ruled paper is then read in, which transfers the pattern from the ruled paper, preparing the cards for stamping; after which, the process is mechanical, punching the holes in the card, and applying the card to the machine. The result is, that boys can weave rich figures in the loom; and even youths can weave those intricate patterns, which formerly would have required careful workmen of twenty years' experience.

The patterns are not shewn to customers upon paper, but are woven first and then shewn. The designer and weaver being in constant communication during its production, considerable alteration and improvement may have been made, and if it does not answer the artist's expectations, it is frequently wholly rejected. As many as two hundred patterns will thus be submitted to our great London houses for selection at one time. I have been delighted, at opening a selection of French furniture damasks, to see the decided difference of cha-

racteristic design, each superior in its class, the skilful variations of weaving used to produce variety of effect, and the rich mellow colouring, whatever its tone.

Thus is an overpowering array of educated talent among the weavers and their masters, opposed to our neglected workmen of Spitalfields; and can we for a moment feel surprised at their depressed trade, when the foreigner has such advantage? Yet incredible as it may appear, I know one large master weaver in particular, who contends for our perfect equality with the foreigner, declaring it to be prejudice of west-end tradesmen against English weaving. Perhaps the best answer to this is, a reference to the comparative exports. We export but a small proportion of our manufactured silks; France by far the greatest portion of hers. All this superiority, produced by the right teaching of Design, is not confined to weaving of silks; there is a universal admission of the superiority of their shawl manufacture, which commands a great trade, and upon which they bestow the most careful study. Extensive research was even instituted to discover the origin of the real and true cachemère pattern, which proving successful, greatly elevated the character of design. I may just remark, that the jacquard loom is applicable to all the fabrics of weaving,—ribbons, table linen, damasks, &c. &c.

In the Royal School of Design in Paris, the utmost activity and liberality prevail, it having seldom less than eight hundred scholars. The term of study is three years; the expense five francs for the first, and ten francs for each of the two succeeding years. The burden is borne between the government and the municipality; at Rouen, and other localities, it is the same.

Once in five years there takes place in the palace of the Louvre a public exhibition of manufactures from the whole of France; it is under the immediate sanction and personal inspection of the king, assisted by a minister of the interior; the king distributing the prizes. There is no limitation of objects, provided they are instrumental to the advancement of arts and manufactures. It is a general display of national industry and genius, exciting a lively interest in the progress of discovery and improvement, and affording quite a national exultation; in assembling from all quarters for public display, the most successful performances of manufacturing industry, they place their skill and success under favourable comparison with imports from foreign countries, a conviction of successful rivalry stimulating to increased efforts.

The merits of the various productions are discussed, and the victors' names enumerated with pride; while all persons enjoy the advantage of freely inspecting the successful productions, gaining valuable information, and perhaps possessing themselves of hints to be improved into important discoveries.

The expositor of every class obtains advantageous promulgation of his merits, securing a reputation for skill and proficiency in his branch of trade, and the customer learns where he can obtain the best articles, or open superior connections of business. All is emulation and excitement for improvement.

The utmost attention was paid to Design under the empire; every trinket, jewel, or piece of furniture prepared for the court, was either approved or designed by Perrier or Fontaine. A similar course is still pursued, and the elevation of public taste carefully considered. The arts owe much to the zealous and generous support of Louis Philippe, who ranks only second to Louis of Bavaria, in the extent of the works of fine art he has restored, finished, or created.

These brief imperfect notices may be sufficient to draw your careful attention to the encouraging feeling for the arts and for applied design existing upon the Continent, and cause you to rebut the senseless observation, that we equal them in knowledge of its fundamental principles. It is impossible to do so without great change. We are at present bolstering up a sort of appearance, by employing foreign artists as our designers; this is unnatural, and not likely to be permanent. A German cannot think English, nor a Prussian, a Frenchman; or a Swiss; it is true, the unchangeable principles of art are alike in all countries, yet each has its distinguishing character in the great social circle of the world, and so it has in art.